

REMARKS

The office action issued by the Examiner and the citations referred to in the office action have been carefully considered.

Interview with Examiner

Applicant thanks the Examiner for the interview provided on November 30, 2010. The remarks made herein are considered responsive to and reflective of the contents of the interview.

Specification

The abstract of the disclosure was objected to. An amended abstract is provided herewith. Support for the amendments are found at least at paragraph [0029] of the Specification. No new matter is presented thereby. Entry thereof is kindly requested.

Drawings

The drawings were objected to under 37 CFR 1.83(a). By the above amendment, claim 15 is cancelled. The objection is believed to be obviated.

Rejections under 35 U.S.C. §102

Claims 1-9, 11-14 and 16-21 were rejected under 35 U.S.C. 102(b) as being anticipated by Turillon et al. (US 4134491).

Claims 1, 6, and 13

Claims 1, 6, and 13 now recite that the foam component fills substantially all of an inner space defined by the outer portion. Claim 1 further recites that the volatile is stored in cells of the foam component and release of the volatile is restricted by the cells. Claim 6 further recites that the foam component is non-reactive relative to the volatile. Claim 13 further recites that the foam component is an inert monolith.

Support for these amendments is found at least at Figures 1, 8, 10-15 and paragraphs [0029], [0049]-[0053], and [0098]. The inert or non-reactive nature of the foam component is supported by the exemplary embodiments of the foam component provided in the Specification. For example, the foam component may be of ceramic foam, alumina ceramic foam, silicon oxycarbide foam, aluminum foam, syntactic foam, glass microspheres with ceramic or cementitious binders, glass foam, ceramic/carbon foam, graphite foam. See paragraphs [0068]-[0076]. Further, exemplary materials for filling the apparatus include ammonia, butane, and propane. See paragraphs [0078]-[0083]. With respect to exemplary volatiles provided to the apparatus, exemplary materials for the foam components are inert or non-reactive, as recognized by those having ordinary skill in the art. Accordingly, it is respectfully submitted that the claims are fully supported by the Specification.

It is submitted that Turillon fails to disclose that its collapsible foam structures 34 fill substantially all of the space within its pressure vessel 20. Instead, as shown in Figure 3 of Turillon, pressure vessel 20 is filled primarily with hydridable metal 26, with collapsible foam structures 34 sparsely distributed within the hydridable metal 26.

The claims as amended clearly diverges from the purpose and intent of Turillon. Every embodiment of Turillon shows hydridable metal 26 filling pressure vessel 20. Within the hydridable metal 26 are some other structures that have the common feature of being collapsible.

Referring now to FIG. 1 of the drawings, pressure vessel 20 fitted with port 22 and valve 24 contains, in available space, particles of **hydridable metal 26**. ... FIG. 2 shows a random distribution of **collapsible structures 32** dispersed in the

mass of powdered hydridable metal 26 within pressure vessel 20. ... FIG. 3 shows **collapsible foam structures 34** within pressure vessel 20 some of which are mounted on armature 36 to provide a higher concentration of collapsible structures at the bottom of pressure vessel 20 than in other portions of pressure vessel 20. ... Similarly, a cube or other convenient shape of closed cell foam 46 as depicted in FIG. 4A operates in a similar manner.

It would not have been obvious to modify the teachings to Turillon to reduce or eliminate the hydridable metal. Hydridable metals are the very premise for the disclosure of Turillon:

Hydridable metals are charged with hydrogen by introducing pressurized gaseous hydrogen into valved containers. The hydrogen gas reacts exothermically with the metal to form a compound. Discharging of the metal hydride is accomplished by opening the valve of the container, to permit decomposition of the metal hydride, an endothermic reaction. It has been found expedient when gas is desired from the storage vessel to heat the storage vessel thereby increasing the flow of hydrogen or providing hydrogen at pressures substantially above atmospheric.

Turillon further discloses the purpose of the foam with relation to the hydridable metal: “During the adsorption/desorption process, the hydridable metal has been found to expand and contract as much as 25% in volume as a result of hydrogen introduction and release from the metal lattice.” As further disclosed in Turillon, the foam is provided in Turillon only to resolve expansion and contraction of the hydridable metal. Without the hydridable metal, the foam is rendered useless to the disclosure of Turillon. Removal of the hydridable metal renders Turillon inoperable for its intended purpose: to benefit from the reactive nature of hydridable metal while mitigating the effects of expansion and contraction of the same.

Therefore, it is respectfully submitted that Turillon neither discloses nor suggests that a foam component fills substantially all of an inner space of a storage apparatus. Reconsideration of claims 1, 6, and 13 is kindly requested.

Claims 5 and 11

Claim 5 recites “a sealing component disposed upon at least a portion of said foam component.” Claim 11 recites “that wherein at least a portion of a surface of said foam component is sealed.”

The Office Action asserts that sealing is inherent to closed cell foam. However, the foam component includes the closed cells. Thus, the recitation of a sealing component is a further limitation not already satisfied by the recitation of the foam component. For example, claim 11 being construed as suggested by the Office Action—with the sealing component as a portion of the foam component—could be rewritten as “further comprising a portion of said foam component disposed upon at least a portion of said foam component.” This is outside the scope of reasonable claim construction. Reconsideration is kindly requested.

Claim 12

Claim 12 recites: “wherein said foam component is provided with at least one channel.” Turillon discloses: “A collapsible structure 28 extends axially through pressure vessel 20 from port 22 substantially the entire length of pressure vessel 20.” This collapsible structure 28 forms a type of channel through hydridable metal 26, not any foam of Turillon. This collapsible structure 28—shown in Fig. 1—is provided as an alternative embodiment to the one including foam—shown in Fig. 3.

A channel through foam is not disclosed in Turillon, so it is proposed that Turillon fails to anticipate claim 12 under 35 U.S.C. 102. Whether or not it is appropriate to combine the embodiments of Turillon under 35 U.S.C. 103, such a combination would render hydridable metal with a collapsible structure extending through the hydridable metal as well as foam structures distributed throughout the hydridable metal. This combination, if even proper, would still fail to provide a channel through the foam structures of Turillon. Reconsideration is kindly requested.

Dependent claims

Claims 2-5 and 22-24 depend from claim 1. As the independent claim from which they depend is patentable, as discussed herein, it is respectfully submitted that claims 2-5 and 22-24 are patentable for at least the same reasons advanced with respect to claim 1. Reconsideration is kindly requested.

Claims 7-12 and 18-19 depend from claim 6. As the independent claim from which they depend is patentable, as discussed herein, it is respectfully submitted that claims 7-12 and 18-19 are patentable for at least the same reasons advanced with respect to claim 6. Reconsideration is kindly requested.

Claims 14, 16-17, 20-21 depend from claim 13. As the independent claim from which they depend is patentable, as discussed herein, it is respectfully submitted that claims 14, 16-17, 20-21 are patentable for at least the same reasons advanced with respect to claim 13. Reconsideration is kindly requested.

Rejections under 35 U.S.C. §103

Claim 10

Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over Turillon et al. It is respectfully submitted that Turillon fails to render claim 10 as obvious for at least the same reasons advanced with respect to claim 6. Reconsideration is kindly requested.

It is respectfully submitted that all of the Examiner's objections have been successfully traversed and that the application is now in order for allowance. Accordingly, reconsideration of the application and allowance thereof is courteously solicited.

[continued on next page]

The Director is authorized to charge any additional fee(s) or any underpayment of fee(s), or to credit any overpayments to **Deposit Account Number 50-2298**. Please ensure that Attorney Docket Number 37929-32201 is referred to when charging any payments or credits for this case.

Respectfully submitted,

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